

A NEW SPECIES OF *LEIOCEPHALUS* (REPTILIA: IGUANIDAE) FROM HISPANIOLA

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Abstract.—*Leiocephalus rhotidira*, related to *L. vinculum*, is described from the southern coast of the northwestern Haitian Presqu'île du Nord Ouest. Its relationships are apparently with *L. v. endomychus* of the Haitian Vallée de l'Artibonite and Plateau Central.

In a series of papers (Schwartz, 1966, 1967, 1968) I reviewed the Hispaniolan members of the Antillean iguanid lizard genus *Leiocephalus* Gray. According to Williams' (1961) concept, the 8 species may be conveniently divided into those that have their centers of distribution on, or are restricted to, the Hispaniolan north island (north of the Cul de Sac-Valle de Neiba plain)—*lunatus* Cochran, *personatus* Cochran, *pratensis* Cochran, *schreibersi* Gravenhorst, and *semilineatus* Dunn—or on the south island (south of the plain)—*barahonensis* Schmidt, and *melanochlorus* Cope. Although *L. personatus* is widespread on the north island, it also is present in some limited regions on the south island. Geographically, the most peculiar species is *L. vinculum* Cochran. It is presently regarded as having three subspecies, widely separated from each other: *vinculum* on Ile de la Gonaïve, *altavelensis* Noble and Hassler on Isla Alto Velo off the southern tip of the Dominican Península de Barahona, and *endomychus* Schwartz in the interior Haitian Vallée de l'Artibonite and probably on the Plateau Central. Because of this peculiar distribution, it is difficult to classify *L. vinculum* as being either north or south island in its affinities.

One explanation for the peculiar distribution of *L. vinculum* is that it was at one time (and perhaps still is, in regions yet unsampled) a widespread lizard which has been forced out of much of its mainland range by more successful competitors, not only *Leiocephalus* but perhaps also species of the teiid lizard genus *Ameiva*, and that its present known distribution is a remnant or relictual one resulting from this competition. The often extensive arid habitats on Hispaniola harbor a diversity of moderate-to-large terrestrial lizards whose ecological requirements overlap to a large extent.

In the summer of 1978, Eugene D. Graham, Jr., William W. Sommer, and I began an attempt to investigate the herpetofauna of the Haitian Presqu'île du Nord Ouest, one of the least known regions of Hispaniola. In our attempt we were only partly successful; we were able to travel from Gonaïves to Coridon along the base of the southern coast of this peninsula. The road

from Gonaïves passes over a series of rugged eroded limestone hills, descends to the coast at an oasis, and follows the coast through very desolate country at least as far as Coridon. This area is in the rainshadow of the Massif du Nord Ouest, and it is indeed xeric. The rolling hills near Gonaïves noted above, although extremely rugged, are somewhat more mesic; this region is in general called Lapierre and is sparsely settled. There are a few scattered small villages or individual houses along the roadway, and it was relatively simple to encourage people to collect herpetological specimens for us. We have little expectation of anything exciting since the area is bleak, but we were amazed at the diversity of the herpetofauna there.

The dominant *Leiocephalus*, seen sunning on rocks and running across the road, is *L. schreibersi*; this is certainly the expected member of the genus in such a habitat at this locality. On 9 July a single adult male of a very different style of *Leiocephalus* was brought to us. We urged the natives to secure more of these, and they obtained five additional specimens. They indicated that the lizards occurred at the base of the hills above the village. We never saw any of them ourselves, and the precise habitat occupied by these lizards remains conjectural.

The new lizards are closely allied to *L. vinculum* and might properly be regarded as a subspecies of that species, but the hiatus in the ranges and the characteristics of the new lizards suggest that they are a *L. vinculum* derivative, probably limited to special ecological situations on the Presqu'île du Nord Ouest—in other words, another fragment of a basic and now much splintered *L. vinculum* stock. Until much more is known of the variation and especially the distribution of *L. vinculum* on Hispaniola itself, specific status for these lizards is the more appropriate alternative.

Leiocephalus rhotidira, new species

Fig. 1

Holotype.—Carnegie Museum of Natural History (CM) 60520, adult male, from Lapierre, 10.6 km W Ça Soleil, 122 m, Département de l'Artibonite, Haiti, one of a series collected by native collectors, 14 July 1978. Original number Albert Schwartz Field Series (ASFS) V46747.

Paratypes.—ASFS V46748–50, same data as holotype; ASFS V46324, same locality as holotype, 9 July 1978; ASFS V46742, 6.7 km W Ça Soleil, 61 m, 14 July 1978.

Definition.—A species of *Leiocephalus* characterized by a combination of: 1) small size (males to 66 mm, females to 56 mm snout-vent lengths); 2) distinct sexual dichromatism, and males with a prominent pair of enlarged postanal scales; 3) absence of a lateral fold; 4) dorsal scales imbricate, not denticulate or tricuspid, and keeled; ventral scales imbricate, smooth, and not denticulate; 5) median crest scales slightly enlarged, lower than median

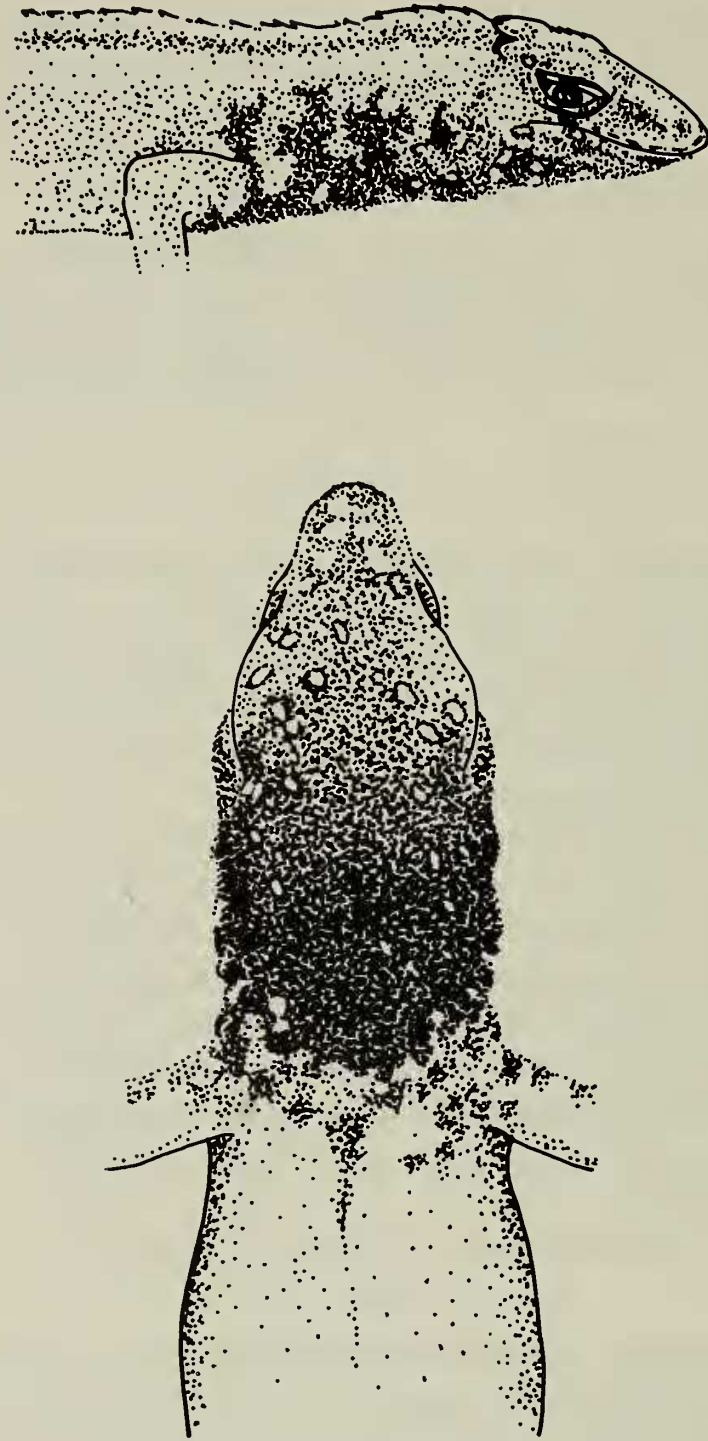


Fig. 1. Lateral and ventral views of the holotype of *Leiocephalus rhtidira* (CM 60520).

dorsal caudal scales, 51–65 in occiput to vent distance; 6) one-half midbody scales 22–25; 7) supraoculars 5/5 to 6/6 (no mode); 8) loreals 4–6; 9) temporals 8–10; 10) supraorbital semicircles usually incomplete; 11) parietals always in contact; 12) median head scales either 4 or 5, mode 4; 13) preauricular scale small (see Schwartz, 1967:4 for this usage); 14) throat, chest, anterior faces of forelimbs, and sides of neck between prominent neck wrinkles black in males; 15) ventral color orange in males, pale yellow in females; 16) ventral pattern absent in both sexes except for scattered greenish scales

on the sides of the abdomen in males; 17) facial mask absent in males, poorly shown in females where it is the anteriormost pale portion of a broad lateral dark gray band which extends from the hindlimbs to the eyes; 18) dorsum unpatterned tan to grayish tan in males with a conspicuous pair of broad pale cream to pale grayish tan dorsolateral stripes from the supraorbital semicircles posteriorly along the length of the body, becoming paler posteriorly; 19) throat in females and juveniles with a gray reticulum with vague indications in this pattern of a pair of paramedian gray lines.

Description of holotype.—The holotype is an adult male with a snout-vent length of 66 mm and a broken tail; the scale counts are: dorsals occiput-vent 59, dorsals occiput-axilla 24, trunk dorsals 35; one-half midbody scales 24; tricarinate subdigital scales on fourth toe 24 on right foot, left foot uncountable; loreal scales 5/6, supraocular scales 5/5, temporals 10, supraorbital semicircles incomplete, parietals in contact, 3 prefrontal scales, 4 median head scales, 5 frontoparietal scales, the prefrontal and frontoparietal rows complete. Dorsum in life dull grayish tan and without chevronate pattern; a pair of faintly paler longitudinal lines, 3 to 4 scales wide, from behind the eyes posteriorly to above the hindlimb insertions; all dorsal head scales tan with more or less symmetrical black spotting on the paraparietals and the parietal, the supraorbitals, and the snout, those on the snout mere flecks; uppersides of hindlimbs pale green, those of forelimbs concolor with dorsum; throat, chest, and anterior faces of forelimbs black, with a very few scattered greenish scales on the chin and throat and more abundantly at the junction of the black chest area and the orange venter; scattered iridescent bright green scales on the lower sides, which are pale grayish tan, and laterally onto the venter; black throat pigment extending dorsally between the conspicuous neck wrinkles to form three extensions of this color on the sides of the neck, the wrinkles themselves set off from the balance of the neck color by white scales, no dark mask present but a subocular black dot, intensified by a white dot on each side, as well as a white dot at the posterior corner of the eye.

Variation.—Scale counts for the series (including the adult male holotype, a subadult male, an adult female, a subadult female, and two juveniles) are: dorsal scales occiput-vent 51–65 (\bar{x} = 58.4), dorsal scales occiput-axilla 19–24 (20.8), dorsal trunk scales 32–44 (37.8); one-half midbody scales 22–25 (23.7); fourth toe subdigital scales 18–23 (21.7); loreals 4–6 (5.0); temporals 8–10 (9.0); supraocular scales 5/5 (2 individuals), 5/6 (2), 6/6 (2); supraorbital semicircles incomplete (4 individuals) or complete (2); prefrontal scales 2 or 3 (M_0 = 3, 66%), row always complete; median head scales 4 or 5 (M_0 = 4, 83%); frontoparietal scales 3–5 (M_0 = 5, 50%); modal head scale formula 3–4–5.

The subadult male (ASFS V46324; snout-vent length 59 mm) was described in life as “dorsal ground color tan, with a conspicuous pair of pale

cream dorsolateral stripes on neck and anterior part of trunk; head shields bright tan with symmetrical black flecking on paraparietals and supraoculars; neck and shoulders and supraaxillary areas with three jet black patches. Upper sides of all limbs concolor with tan of dorsum, flecked with pale tan; throat deep orange, all other ventral surfaces yellow including underside of tail; upperside of tail tan, dorsal crest scales cream; tail banded tan-and-cream." After preservation, the throat is dark dusky gray and the black interwrinkle dorsad patches noted above arise from this dark throat area. The dorsolateral stripes are more prominent in this subadult male than in the holotype. The differences in coloration and intensity between the subadult and adult males are probably related to the age difference.

The adult female (ASFS V46748; snout-vent length 56 mm) was described in life as: "dorsal ground color dark brown with a pair of buffy dorsolateral stripes; sides very dark gray; ventral ground color pale yellow; pale grayish orange on throat, with a vague dark gray reticulum and indications of a pair of paramedian longitudinal gray lines." The neck wrinkling is apparent on the female but there are no black patches between the wrinkles nor are they set off by white coloration. Aside from the dorsolateral stripes, this female is a very dull colored and drab lizard. The dark gray sides, bordered above by the buffy dorsolateral stripes and below by a vague paler longitudinal stripe between the fore- and hindlimbs, are especially prominent.

The subadult female (ASFS V46742; snout-vent length 45 mm) was like the adult female except that the dorsum was tan and the venter yellow with a more orange tinge on the throat. The throat pattern was a pale gray reticulum, and the paramedian gray lines are so broken as to be hardly recognizable.

The two juveniles (ASFS V46749–50) have snout-vent lengths of 30 mm. They are colored and patterned like the females except that the dorsolateral stripes are white anteriorly, strongly contrasting with the tan to brown dorsal color, and the ventral ground color is yellow-green. The sides are very dark gray and accentuate the white dorsolateral stripes. The throat markings are a dark gray reticulum, but the throat ground color is not orange. One juvenile (ASFS V46750) has indications of about five faint, widely spaced, darker brownish transverse bands across the back between the longitudinal stripes and is the only specimen with any sort of middorsal pattern.

Comparisons.—The details of scutellation and of color and pattern eliminate all other Hispaniolan (or even Antillean) *Leiocephalus* as near relatives of *L. ritudira* with the exception of *L. vinculum*. Of the Hispaniolan species, *L. melanochlorus* and *L. schreibersi* have lateral folds, *L. pratensis* lacks a median dorsal row of crest scales, *L. barahonensis* and *L. semilineatus* have enlarged preauricular scales, *L. lunatus* males have white throats with distinct black dots, and *L. personatus* females have grayish throats with darker gray dots. All these species also differ in many other ways from

L. rhutidira as well. The key to the Hispaniolan species of *Leiocephalus* in Schwartz (1967:52–53) reaffirms these distinctions. That *L. rhutidira* is closest to *L. vinculum* is obvious in that, when specimens of the former are run through the key, they will key out to *L. vinculum*, provided one uses the key with some latitude. One key-character for *L. vinculum* is the presence in both sexes of a dark throat (heavily patterned and on a dusky ground in some subspecies), whereas female *L. rhutidira* have a dusky throat with a vestigial or faint pattern which is much like the juvenile and subadult female patterns in some subspecies of *L. vinculum*.

One pattern feature of *L. rhutidira* is the lack of any sort of dorsal cross-banding, marbling, dotting, or other sorts of markings found in *L. vinculum*. *Leiocephalus rhutidira* is a less ornate lizard dorsally than is *L. vinculum*. The solid dark gray sides of female *L. rhutidira* differ markedly from those of *L. vinculum* females. *Leiocephalus rhutidira* shares with *L. v. vinculum* the longitudinal paired stripes, but in the latter the throat is not solid black nor are there lateronuchal black extensions.

Leiocephalus v. endomychus, the only mainland subspecies of *L. vinculum*, was described on the basis of a male and a female from near the Barrage de Peligre in the Vallée de l'Artibonite. Another specimen from Hinche on the Plateau Central was tentatively associated with the Peligre material. Since that time, a series of 15 more near-topotypes of *L. v. endomychus* has been secured, so the subspecies is now well represented in collections, and its variation can better be assessed. Field notes in life for a male (ASFS V43786; snout-vent length 66 mm, the same size as the holotype of *L. rhutidira*) state that the "dorsal ground color is green with gray chevrons, the limbs not brighter than the dorsum; the head was brownish, the throat and chest jet black, with some scattered pale green dots; the ventral ground color was greenish orange." Another male (ASFS V43787; snout-vent length 69 mm) was recorded as being like the male described above but with the dorsal chevrons somewhat less obvious. Neither specimen (nor the male holotype) has dorsolateral stripes. Females are tan to gray above, with limbs slightly greenish; the ventral ground color is pea green and the gray throat is heavily spotted and has a central pair of longitudinal lines. As far as can now be determined, neither sex has the strongly wrinkled neck of *L. rhutidira*, although the black throat and chest color of males does extend dorsally onto the sides of the nuchal area as in *L. rhutidira*. Etheridge (1966:85) pointed out that nuchal and antebrachial folds are a diagnostic character of *Leiocephalus*, but their development is somewhat variable within the genus. Even the smallest *L. v. endomychus* (ASFS V43794; snout-vent length 35 mm) lacks the dorsolateral stripes so conspicuous in juvenile *L. rhutidira*.

Considering all three subspecies of *L. vinculum* together, maximum snout-vent length of males varies between 78 mm (*vinculum*) and 69 mm

(*endomychus*), and that of females ranges between 73 mm (*vinculum*) and 63 mm (*altavelensis*). The largest *L. rhotidira* are smaller than any of the subspecies of *L. vinculum*; this may of course be a sample artifact, but the largest male *L. rhotidira* (66 mm) already has the distinctive coloration and pattern. Dorsal crest scales occiput to vent in *L. vinculum* vary between 51 and 65, with means of 55.8, 56.7, and 57.2; the range in *L. rhotidira* is 51–65, with a mean of 58.4, slightly greater than that of any subspecies of *L. vinculum*. The same is true of dorsal crest scales in occiput-axilla, with a mean of 20.8 in *L. rhotidira* and means of 18.6 to 20.0 in the subspecies of *L. vinculum*. Trunk scales show the same relationship, although the mean for *L. rhotidira* (37.8) is only slightly greater than that for *L. v. altavelensis* (37.7). The mean of 5.0 loreal scales in *L. rhotidira* is greater than the means for the subspecies of *L. vinculum* (3.7–4.8).

In *L. vinculum*, the supraorbital scales vary between 4/5 and 7/8, with “abnormal” counts in two specimens of 6/8 and 9/10. Modes in all cases are 6/6 (47% in *L. v. endomychus* to 96% in *L. v. vinculum*). But although the modes are the same in all subspecies (and in fact 6/6 in the “normal” count in most species of *Leiocephalus*), *L. v. endomychus* differs from *L. v. vinculum* and *L. v. altavelensis* in having low counts (4/5–5/6) in 9 of 17 specimens, whereas only one specimen of a total of 77 *L. v. vinculum* and *L. v. altavelensis* has a count less than 6/6. *Leiocephalus rhotidira* has counts resembling those of *L. v. endomychus*—5/5, 5/6, 6/6, all with equal frequency.

In supraorbital semicircles, 4 of 6 *L. rhotidira* (67%) have these series incomplete, whereas they are complete in 69% of *L. v. vinculum* and 94% of *L. v. endomychus*; the series of *L. v. altavelensis* is equally divided. The head scale formula of *L. v. vinculum*, *L. v. altavelensis*, and *L. rhotidira* is 3–4–5, but *L. v. endomychus* has the formula 2–4–4. Prefrontal rows are complete in both species; frontoparietal rows are usually complete in all taxa (always so in *L. v. altavelensis* and *L. rhotidira*) but are incomplete in 23% of *L. v. vinculum* and 6% of *L. v. endomychus*. The usual number of prefrontals in *Leiocephalus* is 3, but only 2 are present as a variant in many species, with low frequency or as an aberrant condition. This is not known in *L. v. altavelensis*, but 36% of *L. v. vinculum*, 59% of *L. v. endomychus*, and 67% of *L. rhotidira* have but 2 prefrontals.

Etymology.—The name *rhotidira* is from the Green *rhotis* (wrinkle) and *deirē* (neck), in allusion to the prominent neck wrinkles, and is a noun in apposition.

Remarks.—Ça Soleil is unlocatable on many maps. It is the local name for the intersection of the major north-south road between Gonaïves and Cap-Haïtien, with the coastal road to the northwest toward Coridon and the Presqu’île du Nord Ouest.

Specimens examined.—All specimens of *L. v. vinculum* and *L. v. alta-*

velensis whose data have been used in the present paper are listed in Schwartz (1967). Additional specimens of *L. v. endomychus* utilized in the present study are from: Haiti, Dépt. de l'Artibonite, 1.1 km–5.1 km NE Barrage de Peligre, 180 m–335 m (ASFS V43786, V43787–93, V43794, V43795–96, V43800, V43801–03).

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